

PULP & PAPER

May 1986

C398-2

COATING: INDUSTRY EXPLORES
ALTERNATE FORMULATIONS
IMPROVED APPLICATION TECHNIQUES

PAPERMAKING: DIAGNOSING
YANKEE DRYER PROBLEMS 90

EXCLUSIVE INTERVIEW: HARNISCH
CEO ON BELOIT ACQUISITION 106

FOCUS: COATING

Gilman rebuilds coater 54

New "ultimate" air knife unit replaces old air knife coater at Gilman Paper; higher solids can be run with reduced pattern and blowoff problems

Fine calcined kaolins 56



TiO₂ substitution on a 2:1 basis and improved rotogravure printability are said to be major advantages over standard, coarse kaolin grades

Future of TiO₂ 64

Supply/demand trends through the next decade analyzed by an industry expert on titanium dioxide reveal tighter supply, price hikes

Customized blended clays 73

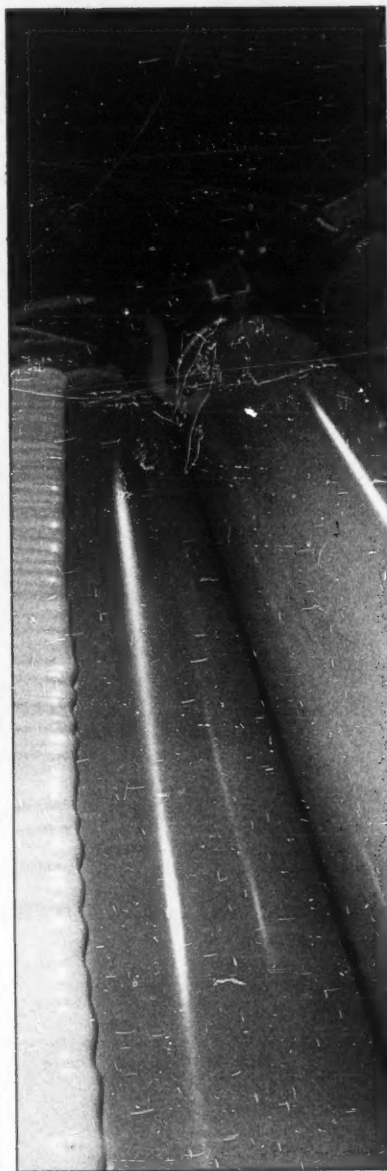
Coated paper manufacturers today blend coating clay products for specific applications, balancing quality needs with cost considerations

Coatweight measurement 76

Photometric sensor utilizing near infrared wavelengths allows online monitoring, provides quick readout of coat weight and film thickness

Coater control applications 127

Online measurement and control has been effectively used on off- and on-machine coaters to improve quality, reduce production costs



THE COVER

*On-machine roll coater at Champion International Corp.'s Deferiet, N.Y., publications paper mill.
(Photo by Mason Morfitt, courtesy of Champion International.)*

OTHER FEATURES

MANAGEMENT

Goessel on Beloit 66

In an interview with P&P, William W. Goessel, Harnischfeger CEO and chairman, discusses the impact of his company's purchase of Beloit Corp.

API Paper Week 94

Record high production, weaker dollar, falling oil prices may signal U.S. rebound in world markets

QUALITY CONTROL

Short span tensile testing 84

Fundamental paper properties such as fiber length, strength, bonding, and orientation can be independently determined by application of this test

PROCESS AUTOMATION

PLC-computer interfaces 87

Properly trained engineers can utilize data collected by programmable logic controllers as troubleshooting tools

PAPERMAKING

Yankee diagnostics 96

Infrared photography, eddy current probes help solve yankee dryer problems such as excessive surface and doctor wear, sheet plugging

Uncoated groundwoods 103

Uncoated groundwood papers have often placed second to other grades but are coming into their own

PULPING

Reducing pumping costs 112

Boise Cascade's Wallula, Wash., mill lowered the electrical demand of pumps in its bleach plant by trimming impellers—for big savings

ENGINEERING/MAINTENANCE

Vibration monitoring 120

Part 2 in three-part series focuses on Federal Paper Board's use of advanced techniques to monitor pumps, motors, and gearboxes at Augusta, Ga.

PULP & PAPER

EDITORIAL STAFF

Editor Ken L. Patrick	AT
Executive Editor Kenneth E. Smith	AT
Executive News Editor Willard E. Mies	SF
Senior Editor John C.W. Evans	NY
Associate Editor Dave R. Allan	NY
Senior News Editor Debra A. Adams	NY
Technical Editor Michael J. Ducey	SF
News Editor Carl P. Espe	SF
News Editor Ted Blackman	SF
Consulting Editor Stephanie Pollitzer	SF
Departments Editor Elizabeth A. Smith	AT
Staff Editor Maude Conrad	SF
Editorial Assistant Suzanne Wright	AT
International Editors Peter Sutton	BR
John Pearson	BR
Hugh O'Brian	BR
Managing Editor Paula J. Irons	SF
Art Director Ellen Zaslow	SF
Copy/Production Editor Regina M. McGrath	SF
Asst. Production Editor Kimberly Johnson	SF
Technical Artist Janet Duncan	SF

Office locations

AT	- Atlanta: 2700 Cumberland Parkway N.W., Suite 530, Atlanta, Ga. 30339; (404) 432-3186
SF	- San Francisco: 500 Howard St., San Francisco, Calif. 94105; (415) 397-1881; Telex 278273
NY	- New York: 370 Lexington Ave., New York, N.Y. 10017; (212) 683-9294; Telex 220442
BR	- Brussels: Chaussée de Charleroi 123a, Boite 5, B-1060, Brussels, Belgium; Telex 846-24672

PUBLISHING HEADQUARTERS San Francisco, California

Publishing Director	Leigh M. Freeman
Group Publisher	Leonard E. Haas
Director of Production	Andrew A. Mickus
Director of Circulation	Wini D. Ragus
Ad Production Coordinator	Mary Marrkand
Marketing Coordinator	Dana Baker
Statistical Assistant	Frances A. Lee

Sales and business offices
are listed on Advertisers' Index page



MILLER FREEMAN publications

Chairman of the Board.....	David R. Stevens
President.....	Marshall W. Freeman
Vice President.....	Charles C. Baake
Vice President.....	Leigh M. Freeman
Vice President.....	Leonard E. Haas
Vice President.....	Barbara M. Hampson
Vice President.....	Thomas L. Kemp
Vice President.....	Wini D. Ragus
Secretary/Treasurer.....	Miller Freeman III
Assistant Treasurer.....	Douglas M. Denny

PULP & PAPER (ISSN 0033-4081) is published monthly except November when semimonthly by MILLER FREEMAN PUBLICATIONS, 500 Howard St., San Francisco, Calif. 94105. Second class postage paid at San Francisco and at additional mailing office.

POSTMASTER: Please send Form 3579 to PULP & PAPER, 500 Howard St., San Francisco, Calif. 94105.

© Copyright 1986 by

ABP Miller Freeman Publications Inc. **VBPA**
All rights reserved.

Subscriptions & Address Change: Sent without charge in the U.S.A. & Canada (upon written request) to individuals in pulp, paper, and board manufacturing firms and paper converting firms. To all others there is a subscription charge of \$50.00 a year in the U.S. All subscriptions to other countries: \$70.00 a year, except Europe and Mediterranean, \$80.00 (air service included). Single copy, \$4.50, except Buyers Guide, \$30.00. Photocopies of articles and complete microform volumes available through University Microfilms International, 300 N. Zeeb Rd., Ann Arbor, Mich. 48106.

Requests, subscription orders, and address changes must show name and position or job of individual, name and location of mill, plant or office where employed, and exact business or product produced at this location.

Send subscription correspondence to:

Circulation Department, PULP & PAPER,
500 Howard St., San Francisco, Calif. 94105.

For address change, include label from recent issue.

COLUMNS

From the Editors	7
by Carl Espe	
Subsidies question will heat up trade talks	
Business Outlook	41
by Ronald M. Gross	
Market pulp: bellwether of the industry?	
Chemical Report	43
by Michael Ducey	
Pigment market in transition; price, availability stable	
Career Development	139
by Roberta Bhasin	
Dealing with anger in the workplace	
Comment	196
by John A. Georges	
Contact your nearest member of Congress	

DEPARTMENTS

Conference Calendar	45
News of People	141
Product Showcase	151
New Products	159
Product Review	169
Literature	173
Bookshelf	178
Finishing/Converting	184
Supplier News Profile	179
Supplier News	182

SERVICES

Reader Service Index	148
Reader Service Card	155
Professional Service Directory	185
Classified Advertising	197
Advertisers Index	194

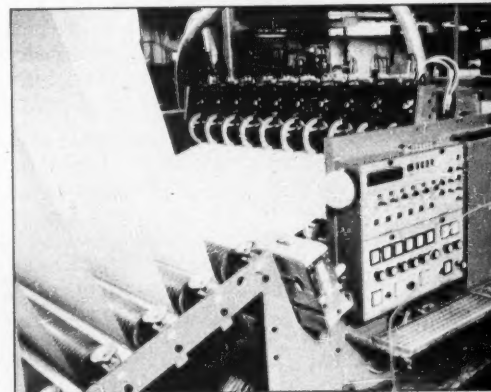
MAY

NEWS

Month in Statistics	9
U.S. paper and paperboard production data for February	
Market Report	11
Deinking, pulp subs prices still rising	
Facial tissue price increase planned	
More U.S. producers lift liner to \$320	
\$450 NBSK accepted in Europe?	
Grade Profile	13
Coated groundwood paper:	
Market in balance until new capacity comes onstream	

NEWS SCAN

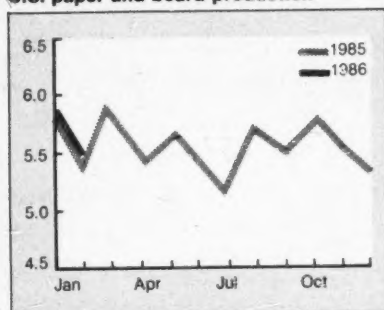
Weyco plans to buy Prince Albert	21
National Gypsum spurs bidding	23
CZ, James River start stock swap	23
Cascades buys Nittec machines	23
Breakthrough in B.C. labor talks	25
Novel labor policies get results	25
Wood workers join forces	27



Hammermill completes upgrades	27
Port Huron rebuilds machines	27
Outlook for U.S. paper market	29
Security paper production slated	29
Wastepaper consumption rising	31
Morris opens as Chinese firm	31
GN scraps plans for Big A dam	33
Publishers like newsprint imports	35
CZ rolls out new Nice 'n Soft	37
Diaper war heats up	37

International News	39
EC okays aid for NCD mills in France	
Sanyo-Kokusaku ups coated paper	
Scott sells share in Colombian mill	
Australian Newsprint adds TMP line	

U.S. paper and board production



U.S. production of paper and paperboard totaled 5.5 million tons in February, up 1.8% from the same month last year, according to the latest American Paper Institute statistics. The trend position for paper and board production dipped slightly in February to 69.7 million tpy, down from a record 71.0 million-tpy rate in January. Incomplete March data show that trend holding steady, API said. Better export markets helped push paperboard production in February to 2.7 million tons, up 4.1% from a year earlier. Paper production was off a slight 0.4%.

Among major grades, uncoated free-sheet continued to strengthen, with shipments up 7.6% compared with last year. Coated paper was off compared with a strong February 1985, but shipments have strengthened compared with the weak second half of 1985. All of the paperboard grades were up sharply compared with last year, and production of kraft linerboard for export jumped 29.1%. February box shipments rose 5.3% over last year.

Canadian newsprint shipments totaled 696,000 metric tons in February, down 1.8% from last year, while operating rates dropped to 94%, the Canadian Pulp & Paper Assn. said. Pulp shipments climbed 20.9% to 589,000 tons.

	Latest month (000 short tons)	% change from year ago	Annualized year-to-date (000 short tons)	% change from year ago
PAPER & PAPERBOARD PRODUCTION¹				
Newsprint	Feb. 434	-2.9	5,383	-2.0
Uncoated groundwood (s)	Feb. 114	-4.2	1,451	-1.3
Coated paper (s)	Feb. 489	-1.8	6,060	-5.0
Uncoated free sheet (s)	Feb. 808	7.6	10,179	9.8
Other printing/writing	Feb. 110	-5.2	1,364	-3.3
Total packaging and other paper (s)	Feb. 405	-6.7	5,043	-5.2
Tissue	Feb. 191	-51.9	4,911	1.2
Total paper	Feb. 2,751	-4	34,390	.9
Unbleached kraft paperboard	Feb. 1,325	3.4	16,714	3.5
Semichemical medium	Feb. 416	4.0	5,155	5.1
Bleached paperboard	Feb. 337	5.6	4,150	7.3
Recycled paperboard	Feb. 642	5.1	7,935	5.6
Total paperboard	Feb. 2,719	4.1	33,954	4.7
Total U.S. paper and paperboard output	Feb. 5,470	1.8	68,344	2.8

PULP, WASTEPAPER & FIBER²

Total U.S. woodpulp production	Jan. 4,846	5.5	58,154	5.5
Market pulp production	Jan. 622	7.4	7,469	7.4
Wastepaper consumption at paper/board mills	Jan. 1,400	6.0	16,802	1.7
Pulpwood consumption (cords)	Jan. 9,208	24.2	110,496	24.2

CONVERTED PRODUCTS STATISTICS³

Corrugated box shipments (billion ft ³)	Feb. 21.306	5.3	45.381 ^a	4.4
Containerboard inventories at U.S. box plants and mills	Feb. 1 2,489	-14.0		

INTERNATIONAL TRADE²

U.S. paper imports (including products)	Jan. 936	4.5	11,237	4.5
Imports of Canadian newsprint	Jan. 289	-54.4	3,463 ^a	-18.1
U.S. paper exports (including products)	Jan. 362	6.2	4,340	6.1
Exports of unbleached kraft linerboard	Feb. 151	29.1	1,946	32.5
Exports of woodpulp	Jan. 368	22.3	4,410	22.2
Norscan pulp inventories ⁴	Feb. 28 1,331	-29.3		
Norscan pulp operating rates ⁴	Feb. 94%	86%	75%	90%

CANADIAN STATISTICS⁵ (reported in metric tons)

Total newsprint shipments	Feb. 696	-1.8	1,409 ^a	-2.1
Operating rates	Feb. 94%	97%	94%	97%
Inventories held by U.S. consumers	Feb. 28 1,452	-3.2		
Other paper/board shipments	Feb. 270	9.3	559	12.0
Woodpulp shipments (export only)	Feb. 589	20.9	1,152 ^a	14.1
Operating rates	Feb. 95%	95%	91%	91%

1. American Paper Institute. 2. API, Bureau of Census, American Pulpwood Assn. 3. Fibre Box Assn., Paperboard Packaging Council. 4. North American/Scandinavian paper-grade market pulp. 5. Canadian Pulp & Paper Assn. 6. Not annualized. (s) = Shipments.

COATED GROUNDWOOD PAPER: Market in balance until new capacity comes onstream

Grade structure:

Coated groundwood papers consist of a basestock made from at least 10% mechanical pulp, with the balance being chemical pulp and fillers. About 85% of coated groundwood output falls into the No. 5 coated class, and the rest is No. 4 coated, which has higher brightness and frequently has a higher basis weight.

Most coated groundwood is made in the 32- to 50-lb range (25 x 38-in., reams of 500), although some paper as light as 30 lb and as heavy as 70 lb is produced. End uses include magazines, Sunday magazines, catalogs, newspaper inserts, directories and other books, fliers, and other commercial printing. In the case of lightweight coated (LWC) as much as a third of the weight of the paper may be coating.

Production/capacity:

Output was healthy in 1985, although it fell a little short of 1984's record performance. An abundance of paper imported from overseas—brought in by the unusual strength of the U.S. dollar—undercut U.S. output somewhat. Plus, a sluggish domestic economy and excessive customer inventories retarded demand growth.

Capacity rose in 1985 at a relatively slow 3.7% pace. With shipments dropping, however, operating rates plummeted.

In 1986 capacity is scheduled to rise by 5.3%. Aside from a 24,000-short-ton rebuild at Pentair Inc.'s Niagara, Wis., mill in the first half, virtually all of the increase is scheduled for July and later, including Bowater Inc.'s 197,000-tpy machine at Catawba, S.C., in July and International Paper Co.'s 200,000 tpy of capacity to be converted from newsprint this autumn. Meanwhile, Repap Enterprises Inc. is planning to start up a new 181,000-tpy machine at Miramichi, N.B., in June 1986.

Outlook:

Any gains to be made in the coated groundwood market this year depend on the strength of the U.S. economy since customer inventories by early 1986 were down to a minimal level.

Producers are hoping for a very robust economy this year to help them absorb the big bulge of new capacity coming onstream in 1986 and 1987 in North America and western Europe.

The effects of the new capacity won't be felt in the U.S. this year much before the fourth quarter. Startup tonnage will undoubtedly be showing up in pressrooms during the summer, with sharply discounted prices. But the volumes won't be significant before the end of the year.

Most observers anticipate a pickup this year in shipments to catalog producers and magazines. So with good growth in the economy, the market should see healthy paper demand and improving operating rates throughout most of the second half.

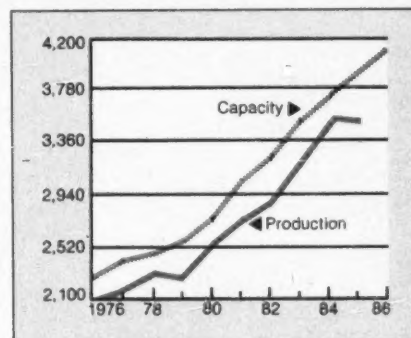
Prices:

Prices were cut in February 1986 to late 1984 levels, and mills were trying to hold the line against further discounting going into the spring. Typical pricing trends (\$/short ton for 34-lb roto paper, year-end except 1986, which is first quarter) are: 1973, \$285; 1974, \$400; 1975, \$399; 1976, \$460; 1977, \$533; 1978, \$582; 1979, \$671; 1980, \$735; 1981, \$760; 1982, \$760; 1983, \$782; 1984, \$890; 1985, \$931; 1986, \$902. Offset prices average about \$10/ton higher.

Markets:

About 62% of all coated No. 5 goes to magazine publishers, and another 16% goes to commercial printers. An additional 17% is shipped directly to catalog and directory printers. Other end uses for coated groundwood paper include books.

SUPPLY/DEMAND (000 tons)



FORECAST (000 tons)

	1984	1985	1986e
Production ¹	3,566	3,536	3,746
Capacity ²	3,766	3,907	4,116
Utilization rate	94.7%	90.5%	91.0%
Imports	325	375	350
Exports	44	37	35
Apparent U.S. consumption	3,847	3,874	4,061
lb/capita	32.67	32.58	33.83
GNP ratio	2.35	2.31	2.35

e = Estimate.

1. P & P estimate.

2. American Paper Institute capacity survey.

TOP U.S. PRODUCERS (000 tpy)

	Annual capacity	Market share (%)
1. Champion	666	16.2
2. International Paper	450	10.9
3. Consolidated	385	9.4
4. Boise Cascade	289	7.0
5. James River ¹	282	6.9
6. Blandin Paper	280	6.8
7. Mead	268	6.5
8. Pentair	210	5.1
9. Midtec Paper	200	4.9
10. Weyerhaeuser	186	4.5

Market share of top five companies:
50.3%

Market share of top ten companies:
78.1%

Total U.S. capacity (1986):
4,116 million short tons

1. James River capacity consists of Crown Zellerbach Corp. mills scheduled to be acquired in April 1986.

MARKET PULP

Weyco Canada plans to buy Prince Albert Pulp

Weyerhaeuser Canada Ltd. will spend C\$498 million to purchase and expand Prince Albert Pulp Co. Ltd. under the terms of a memorandum of understanding signed by Grant Devine, Saskatchewan's Premier, and David McInnes, Weyerhaeuser Canada's president.

To be included in the buy are a bleached kraft market pulp mill at Prince Albert, Sask., with capacity for 280,000 metric tpy, the Bodmin sawmill at Big River, Sask., a chemical plant at Saskatoon, Sask., and timber rights related to the pulp mill and sawmill. Weyco has agreed to pay \$248 million for the assets, financed by a government-held debenture for that amount, to be repaid with interest over an expected 20-year period. The present owner of Prince Albert, Crown Investment Corp., will keep a sawmill in Meadow Lake, Sask.

In addition to purchasing Prince Albert, Weyerhaeuser has agreed to spend \$250 million to modernize and expand the pulp mill and build a new 200,000-short-tpy uncoated free-sheet paper mill at the site. The new mill would be the second-largest uncoated free-sheet mill in Canada, after Domtar Inc.'s 318,000-metric-tpy mill under construction at Windsor, Que.

If the project is approved, construction of the new Prince Albert mill will begin this summer, for com-

pletion in 1989. Most of the paper from the new facility will be sold on the export market, Devine said, and Weyerhaeuser Paper Co. will handle sales in the U.S.

The softwood and hardwood kraft pulp mill will be modernized to produce a higher percentage of hardwood pulp, and capacity is expected to climb to about 310,000 metric tpy. Increased hardwood pulping will allow the mill to take advantage of underutilized aspen timber in the area. Work on the pulp mill will begin immediately following completion of the sale.

In addition to supplying the new paper mill, a significant share of pulp production will continue to be sold in the U.S. and offshore markets by Weyerhaeuser Paper's Pulp Div., the company said.

Financing for the new paper mill and the pulp mill expansion will be one third through direct investment by Weyerhaeuser Canada, one third through debt guaranteed by Weyerhaeuser Co., and one third through Weyerhaeuser Canada debt guaranteed by the provincial government.

Latest to integrate. Weyerhaeuser Canada's proposal is the latest in a growing list of projects to convert unprofitable market pulp mills to higher-value paper production (see table). Georgia-Pacific Corp. converted its

Port Hudson mill at Zachary, La., last year, and Hammermill Paper Co. will complete a conversion project at Selma, Ala., this summer. Champion International Corp. has proposed an uncoated free-sheet machine for a market pulp mill recently started up at Quinnesec, Mich. In Canada, Repap Enterprises bought Boise Cascade's 500-tpd market pulp mill at Newcastle, N.B., last year and will use about 30% of its output to supply a new lightweight coated paper mill at an adjacent site.

The idea of integrating the Prince Albert facility is not new. The mill had been studying the possibility of installing a paper machine for several years, with attention focused most recently on the addition of either a LWC or supercalendered groundwood machine. Earlier options had centered on an aspen mechanical pulping line and a possible newsprint mill.

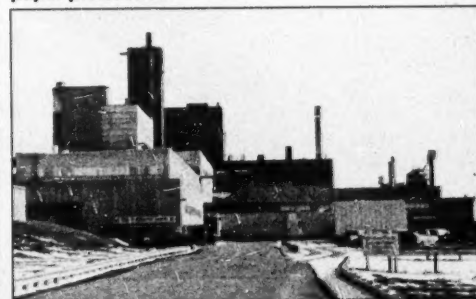
Sharp market impact. One observer estimates that the Weyerhaeuser proposal would cut Prince Albert's uncommitted market pulp output by half, given the demands of the new paper machine and the possibility that pulp would be shipped to other Weyco mills. The loss of uncommitted Prince Albert pulp would have a sharp impact on independent paper makers in the midwestern U.S. since Prince Albert has been one of the

Company/ mill location	Estimated loss of chemical market pulp capacity	Paper/board grade to be produced	Completion date
Georgia-Pacific Corp. Port Hudson, La.	195 ¹	230 UFS	1986
Repap Enterprises Inc. Newcastle, N.B.	55 ²	200 LWC	1986
Bowater Inc. Catawba, S.C.	60	197 LWC	1986
Scott Paper Co. Skowhegan, Maine	140	215 CFS	1986
Boise Cascade Corp. Wallula, Wash.	106	110 UFS	1986
Hammermill Paper Co. Selma, Ala.	140 ¹	185 UFS	1987
Weyerhaeuser Canada Ltd. Prince Albert, Sask.	140 ¹	200 UFS	1989

1. Net of pulp mill expansion. 2. About 55,000 tpy of pulp from the Nelson-Miramichi, N.B., stone groundwood market pulp mill will also be used.
UFS = Uncoated free-sheet; LWC = Lightweight coated; CFS = Coated free-sheet.
Source: Pulp & Paper Week estimates; Whitman Associates Inc.

TABLE 1: Examples of forward integration in the North American market pulp industry (000 short tpy).

BELOW: Weyco plans to spend C\$498 million to buy Prince Albert Pulp and convert it to higher-value paper production.



largest pulp suppliers to that market, he said.

The new paper mill could also have a significant impact on the uncoated free-sheet market. The Prince Albert mill enjoys low fiber and energy costs, and the mill would be well positioned to take advantage of weakness in the Canadian dollar and the lowering of tariffs after next year. The new mill would add about 35% to Weyerhaeuser's fine paper capacity, raising the total to approximately 2,200 short tpd.

The prospect of continued losses was behind Prince Albert's decision to sell the mill, which had been up for sale for several years with no takers. Losses totaled \$47 million over the past five years, he added, and under present conditions he estimated that there could be a further \$100-million loss by 1990. ■

Champion closes part of Pasadena pulp and paper mill

Champion International Corp. will permanently shut down a paper machine, a pulp dryer, and a pulp line at its printing paper mill in Pasadena, Texas, on May 19. The paper machine to be idled, one of four at the mill, is No. 25, a 60-tpd uncoated free-sheet unit. No. 21 pulp dryer will also be closed down, effectively removing the mill from the market pulp business, according to a mill official. Pasadena currently produces about 300 tpd of dried pulp, some for sale on the market and some for transfer to other Champion mills or for internal use at Pasadena.

The older of the mill's two pulp lines will also be shut down, idling three of the facility's nine batch digesters and No. 6 recovery boiler. As presently configured, the mill runs pine on one pulp line and hardwood on the other. After the shutdown, the mill will alternately run pine and hardwood on a single line. However, both bleach plants will continue to operate.

Built in 1937, the Pasadena mill was the first in Texas to make fine paper from southern yellow pine. Current production at the mill is 850 tpd bleached kraft pulp and 750 tpd coated and uncoated free-sheet papers. The mill has been unprofitable for the past several years, and losses for 1986 were projected at several million dollars. ■

ACQUISITIONS/MERGERS

National Gypsum and Genstar spur bidding

When shareholders in building products companies receive a buyout offer these days, they may be well advised to wait until the takeover price is high enough to suit them. Owners of National Gypsum Co. and Genstar Corp. found this method effective.

Although the proposed \$1.1-billion takeover of National Gypsum ranked among the top ten leveraged buyout offers of 1985, Wickes Cos. upped the ante to \$1.228 billion. Wickes Cos., with interests in lumber and building materials, home furnishings, clothing, and hosiery, offered to pay \$54.00/share in cash for the 22.8 million National Gypsum shares outstanding.

Wickes called its all-cash offer "superior" to the leveraged buyout offer of \$41.00/share cash plus \$17/share face value of a new issue of redeemable discount debentures. This prompted National Gypsum's management to increase its bid to \$1.69 billion, or \$46/share in cash and \$28/share in discount debentures. (The 18-year debentures would earn no interest during the first five years but would earn 15.5% annual interest for the remaining term.)

In 1985, when National Gypsum's senior management began the leveraged buyout attempt, it was gener-

ally viewed as an effort to foil a takeover move by the Belzberg family, which at that time was acquiring a large stake in the company (P&P, Jan., p. 23). Originally, the buyout was set at \$40.50/share plus the \$17 debentures. Management later sweetened the offer to \$41.00/share.

Through Gold Bond Building Products Div., National Gypsum runs five paper mills, with capacity for 1,000 tpd of gypsum board liner and 140 tpd of boxboard, located in Anniston, Ala., Stockton, Calif., Pryor, Okla., Kalamazoo, Mich., and Milton, Pa.

Another company, Genstar Corp., may not get a chance to capitalize on the sweetened takeover bid it received from Imasco Ltd. The Finance Committee of the Canadian House of Commons has unanimously urged the Canadian government to oppose the takeover because it would put Canada Trustco Mortgage Corp., Canada's largest trust company, under the control of a "nonfinancial institution." Imasco's original unsolicited bid offered C\$54.00/share, then C\$56.00, and reached C\$58.00 to ensure that Genstar management would not fight the takeover. The \$58/share all-cash offer, amounting to C\$2.34 billion, expired on Apr. 25. ■

Crown Zellerbach, James River start the ball rolling

The long-awaited stock exchange between Crown Zellerbach Corp. and James River Corp. began last month. Shareholders of CZ common can exchange each share for an interest in the timberland, container, and computer services companies that will become part of Sir James Goldsmith's empire, or they can get a 1.0682 share in James River.

The offer is contingent on James River being tendered at least 80% of the 17.6 million CZ shares not owned by Goldsmith. James River will exchange up to 22.6 million shares of its stock to ensure that this happens.

Those who don't go with James River will receive one share each of Cavenham Forest Industries Inc., Eczel Corp., and Gaylord Holdings Ltd., plus \$6.65 in cash for each CZ share. Goldsmith will swap his 48% stake in CZ for control of those companies. ■

Cascades purchases paper machines from Nitec Paper

Cascades Inc. announced the acquisition of paper machines, plus some other equipment and machinery, at Nitec Paper Corp.'s Niagara Falls, N.Y., mill (idle since 1982) for C\$1.75 million. Cascades said that it plans to convert two of the printing and writing paper machines to linerboard and corrugating medium. The tissue machines will probably be scrapped.

The Niagara mill, a subsidiary of Repap Enterprises Inc. of Montreal, Que., has capacity to make 230 tpd of printing and writing papers and 115 tpd of tissue paper. The cost of conversion, other changes, and startup is estimated at C\$10 million. The final plans, however, depend on many factors, including purchase of mill buildings owned by the city of Niagara Falls and agreements on antipollution systems, energy costs, and government aid with employee training. ■

OUTLOOK

Competitive U.S. market seen for paper grades

Total U.S. demand for paper grades will reach 54.2 million tons in 1995 compared with the 1986 level of 44.8 million tons, according to a new study by Communication & Information Services (CIS). Demand is forecast to increase at a 2.3%/year rate during 1986-95 vs a 4.3% annual rate during 1976-85.

In addition to slower growth, the "U.S. market for paper grades will be highly competitive over the next decade," according to the *Long-Term Report—1986-1995: U.S. Demand for Paper Grades in a Competitive U.S. Market*. "U.S., Canadian, and offshore producers will continue to fight for shares of the world's largest printing and writing papers market. Imports of printing and writing grades will increase to 5.9% of total new supply in 1995 compared with 4.8% in 1986 and 1.5% in 1976."

Coated papers' new supply is forecast to grow at a 4.0%/year rate and reach 9.4 million tons in 1995, an increase of 2.7 million tons over the decade. Coated free-sheet grades are expected to show higher growth rates than those for coated groundwood papers. Almost no growth will occur in coated one-side paper due to poor performance in the label and wrapping markets, according to the Walnut Creek, Calif., consulting firm.

Uncoated free-sheet demand will increase by 3.6 million tons over the decade, reaching 14 million tons in 1995. This 3.5%/year rise will be fueled mainly by continued strong

growth in shipments of copy and forms bond grades.

Uncoated groundwood demand is projected to reach 4.0 million tons in 1995, with insert and forms end uses driving much of the 4.4% annual growth. Supercalendered grades will account for a larger share of the groundwood papers market as these grades replace machine-finished papers in several applications.

Newsprint demand will reach 15.2 million tons in 1995, up from 13.1 million tons in 1986. Imports from Canada will lose slightly more of the U.S. market. Newsprint quality requirements will improve as standard newsprint grades compete with up-graded rotonews and SC sheets in non-newspaper applications and as the use of color increases following the lead of *USA Today*.

U.S. production of packaging and industrial grades is forecast to fall 2.2%/year over the next decade. A loss in market share by bags and sacks to plastics will have a major impact on the demand for unbleached grades, which will drop from 3.7 million tons in 1983 to 2.4 million in 1995. The share of plastic in large grocery sacks is projected to increase from 4% in 1982 to 75% in 1995, and its share for smaller grocery bags will surge to 60% in 1995.

Demand for tissue grades will slow to a 1.7%/year rate over the 1986-95 period compared with a 2.3% rate over the previous ten years. Total tissue new supply will reach 5.8 million

TOP: U.S. demand for paper grades (average annual change in demand).
BOTTOM: Summary of end use consumption for printing and writing grades (average annual change in new supply).

	1976-85	1986-95
Uncoated groundwood	7.4%	4.4%
Coated paper	8.2	4.0
Uncoated free-sheet	6.7	3.5
Bristol	1.0	2.3
Tissue	2.3	1.7
Newsprint	3.5	1.7
Packaging/industrial	1.2	-2.2
Total	4.25%	2.3%

	1976-85	1986-95
Business forms	8.6%	6.3%
Inserts	11.4	6.2
Catalogs	12.3	5.1
Office reprographics (copy)	7.1	4.9
Directories	5.1	3.3
Envelope	4.5	3.2
Magazines/periodicals	6.4	2.9
Commercial printing ¹	6.5	2.8
Books	3.9	2.7
Converting	4.4	2.4
Stationery and tablets	5.0	0.9
Labels and wraps	3.9	-0.2

¹ Includes direct mail and marriage mail use.
Source: Communication & Information Services.

tons in 1995 vs 5.1 million tons in 1986. Commercial and industrial tissue demand will grow 3.4%/year vs 0.8% for consumer grades. ■

SPECIALTY PAPERS

Hammermill, Rolland making Nocopi paper

Rolland Inc., Canada, and Hammermill Paper Co., U.S., have been given rights to make the copyrighted photocopy resistant paper of Nocopi International Inc., New York, N.Y., said Nocopi president Norman Gardner.

Meanwhile, Boise Cascade Corp., which had exclusive rights to make Nocopi paper in the Western Hemisphere until Mar. 31, 1986 (*P&P*, Aug., p. 33), decided to get out of that market last fall, according to a Boise spokesman. He noted that Nocopi paper, which is red and produces virtually unreadable photocopies, did not

"fit into" Boise's other lines. Boise, however, will continue to make other types of security papers, he added.

Nocopi has patents in the U.S. and Canada for its specially treated paper and is looking for distributors in the U.S. Besides marketing to the general public, it hopes to sell directly to the government. Nocopi is available in shades of red; the darkest is hardest to photocopy. Coated on both sides, it sells for 4¢ to 5¢/sheet or about \$4,000/short ton, said Gardner.

Nocopi went public last fall when majority holders led by Gardner and

Michael Voticky acquired control and incorporated in Utah as a U.S. firm.

■ After 57 years, U.S. paper currency is getting a face lift. Within a year the Treasury Dept. will begin is-



suing paper money that will be harder to counterfeit on the sophisticated color copier machines now available. The new bills will contain a security thread made of polyester that will be visible when the bill is held up to light but will not reproduce on a copier. The thread will spell out the denomination of the currency, i.e., USA ONE for \$1 bills. Crane & Co. Inc. of Dalton, Mass., suppliers of U.S. paper money, developed the system. European currency already uses watermark designs for protection.

Counterfeiters will run into another snag when the Treasury Dept. starts to print "United States of America" around the portrait borders on the bills in minute type invisible to copier machines. The words can be seen with a seven-power magnifying glass. A black market trading in old bills could then spring up. ■

WASTEPAPER

Wastepaper consumption is rising more than exports

J. Rodney Edwards, the American Paper Institute's vice president of the paperboard group, reported that "paper and paperboard mills utilizing wastepaper have recorded strong production totals for the first two months of this year." He expects supply and demand to be in balance in the U.S. during 1986, with domestic demand increasing while export demand has leveled off.

Increased demand for paperboard packaging has improved production schedules at mills producing recycled paperboard and containerboard, Edwards noted. Home building should remain strong because of lower mortgage rates, increasing demand for gypsum wallboard and other building products.

Last year, however, domestic use fell to 16.5 million short tons from 17.2 million tons in 1984, due to lower production at paper and paperboard mills using paperstock as a raw material, said the API. Exports rose 1.6% during that time to 3.3 million tons.

Total collections of recyclable paper in 1985 were down 3.1% from the year before to 19.8 million tons. Old corrugated container collections fell just 0.2% to 9.2 million tons, while domestic consumption was off 0.9% and exports rose 4%. In January, though, domestic consumption rose 6.5% from two years earlier.

Old newspaper collections in 1985 were off 2.5% to 3.6 million tons; and domestic use fell 6.3% to 2.7 million tons. Exports rose 16% during that time to 625,000 tons. In January, domestic consumption was still off 1.1% compared with a year earlier.

Mixed papers consumption by domestic mills was down 3.9% to 1.9 million tons, and exports were off 0.6% to 880,000 tons. Domestic consumption of the high grades fell 9.9% to 3.6 million tons, and exports were off 14.6% to 470,000 tons. The availability and low cost of market pulp

during the year was cited as the primary cause for the drop in high-grade paperstock demand.

The API noted that all wastepaper grades were in "ample supply" in 1985, with OCC and old news in oversupply in some areas of the country. Also, export shipments moved from West Coast ports to shipment from East Coast ports—1.125 million tons were shipped from the East last year compared with 873,000 in 1984. ■

INTERNATIONAL TRADE

Morris Paper reopens as China's first foreign venture

Morris Paper Board Co. is making history as the first foreign manufacturing operation that People's Rep. China has invested in on its own. The 100-tpd Paterson, N.J., uncoated boxboard mill, i.e., the first division of the newly formed U.S. corporation ChinAm Inc. (New Jersey), was expected to reopen in late April after improvements costing about \$400,000 are completed, ChinAm representatives said.

ChinAm, a wholly owned subsidiary of Chinese government-owned China National Packaging Corp. in Beijing, China, plans to eventually buy other U.S. firms. However, it is not certain if the growth will be "vertical or horizontal," said Irwin Silberman, vice president of China Tek Inc., which represented CNPC in the purchase and is continuing to advise mill management. When the sale closed on Jan. 2, the mill became ChinAm's Morris Paper Board Div.

ChinAm has made only necessary improvements in all sections of the facility to meet building and other codes and prevent breakdowns once the mill is brought back online, according to ChinAm's associate president and chief engineer, Ji Xing. Xing is also director of CNPC Research Institute in Beijing. Xing and ChinAm's vice president and manager, Shiyan Guo, from the management department of CNPC, are stationed at the mill.

Xing and Guo said that China hopes to learn U.S. business ways to apply to papermaking in China. The mill eventually will employ about 55 workers; most will continue to be organized under United Paperworkers International Union. Xing, Guo, Silberman, plus a superintendent of operations and a head mechanic will

TOP: 1985 wastepaper data (short tons). BOTTOM: 1984 wastepaper data (short tons).

	Consumption at U.S. paper and paperboard mills*	Exports	Total collected
News	3,014,431	625,631	3,640,062
Corrugated	7,902,275	1,310,876	9,213,151
Mixed	1,898,070	879,825	2,777,895
High grades	3,599,961	469,594	4,069,555
Other	82,510	—	82,510
Total	16,497,247	3,285,926	19,783,173
News	3,194,772	539,431	3,734,203
Corrugated	7,971,702	1,260,845	9,232,547
Mixed	1,974,540	885,478	2,860,018
High grades	3,997,713	549,687	4,547,400
Other	44,265	—	44,265
Total	17,182,992	3,235,441	20,418,433

*Includes consumption at plants making molded pulp and insulation products.
Source: American Paper Institute.

In January, Maine's Dept. of Environmental Protection denied the water quality certification needed to obtain a federal license for construction, stating that the dam would have lowered the dissolved oxygen content of the river below federal standards (P&P, Mar., p. 27). This ruling was criticized by Governor Brennan and other state politicians. Shortly thereafter, GN announced its plans to restructure and scale back, eliminating 1,200 to 1,400 jobs in the next several years. The scale-back will gradually drop the core capacity of the two mills—combined capacity is to decline this year by about 140,000 tons from 838,405 tons of newsprint and groundwood paper. Several paper machines will be shutdown forever.

Asked whether cancelling Big A would affect the modernization of the Maine mills, including the \$155-million upgrade of East Millinocket and the rebuild of two newsprint machines, a spokesman emphasized that GN will "still move forward with modernization but only to the extent of present low-cost hydroelectric energy and cogeneration." ■

Supreme Court to hear IP's wastewater dispute

In the latest round of a long-standing fight between Vermont officials and property owners and International Paper Co., the U.S. Supreme Court has agreed to hear arguments in the case. Vermont residents along the southern shore of Lake Champlain have charged that wastewater discharge from IP's 690-tpd bleached pulp and paper mill at Ticonderoga, N.Y., is polluting the lake and thereby damaging property values in their communities.

At issue, in what could be a major environmental test case, is whether citizens of one state have the right to sue over pollution damage produced by a neighboring state. Property owners are suing IP for approximately \$120 million in damages in the suit, which was initiated in 1978.

According to Peter Langrock, attorney for the Vermont property owners, no court date has been set, but it is expected that arguments will begin in early fall. The latest ruling was given last November by the Second U.S. Circuit Court of Appeals. The court upheld a federal court decision denying IP's request to dismiss the case.

IP and New York State have been involved in litigation brought by Vermont and the Environmental Protection Agency over Lake Champlain pollution since the late 1960s. At that time, the suit involved sludge discharged from a previous IP mill in the same area.

In November 1973, the Supreme Court ruled in favor of the environmentalists, requiring IP to improve water treatment facilities at the new mill (completed in 1971) and make a \$500,000 contribution to Vermont for the future preservation and protection of the lake.

ENVIRONMENT BRIEFS

■ The Environmental Protection Agency announced its intent to list chloroform as a hazardous air pollutant under Section 112 of the Clean Air Act. The EPA alleges that the pulp bleaching process accounts for about 25% of the chloroform emissions in the U.S. and states that chloroform is a known animal carcinogen and probable human carcinogen. The American Paper Institute warned that such a listing would cost the industry over \$250 million annually.

■ A nationwide EPA survey has found that very low levels of dioxin have been found in bleached kraft pulp sludges from mills in Maine, Minnesota, and Wisconsin. The pulp and paper industry and the EPA have jointly commissioned the National Council of the Paper Industry for Air & Stream Improvement to begin a study of these sludges and their effects on landfill sites. Regulations for sludges containing dioxin are being planned at the federal and state levels. The EPA proposes prohibiting the land disposal of sludges containing dioxin to 1 ppb. Maine proposes a 100-parts-per-trillion limit.

■ President Reagan and Canadian Prime Minister Brian Mulroney recently reached an agreement to fight acid rain. While details haven't been released, the plan reportedly calls for a \$5-billion program to introduce new coal-burning power plants to reduce acid rain. Industry and the U.S. federal government would each contribute \$2.5 billion to the program. Meanwhile, two bills are pending in the House of Representatives that would require sulfur dioxide emissions from the U.S. to be reduced by at least 10 million tons over ten years. Emissions now are about 24 million tpy. ■

NEWSPRINT

Newspaper publishers learn to love offshore imports

Last year, U.S. customers imported 365,000 short tons of newsprint from offshore, 75% more than in 1984. Big gainers among the supplier nations included Sweden, up 53%; Norway, up 25%; Finland, up 52%; South Africa, up almost 690%; and the U.K., up by an astronomical percentage from virtually nothing in 1984.

As with previous years, the biggest tonnages came into the Sunbelt. But New York City and Philadelphia both showed up on the list of the ten most important ports of entry. Actually, six of the top ten on that list are on the East Coast, including Miami.

The most significant new factors among the supplier nations are the U.K., shipping the majority of its tonnage into the East and Gulf Coasts, and South Africa, with significant volumes going into New York City, Houston, Miami, and Los Angeles. Scandinavian suppliers represented 70% of offshore imports in 1985, down from 85% in 1984. But Sweden had the largest absolute increase.

Not all of the figures can be taken at face value. Italy's import amount, for example, is considered to be suspect. Observers believe that the Italian import may have been uncoated or coated groundwood paper that was misclassified as newsprint. ■

U.S. newsprint imports—offshore tonnage, 1985 (top ten ports, 000 short tons).

Port of entry	Major countries of origin ¹	Tons
Los Angeles	Norway, Sweden, Finland	87,210
San Francisco	Norway, Sweden	61,190
Houston	Sweden, South Africa	49,511
Philadelphia	Finland, Sweden, Italy*	48,067
Miami	Sweden, U.K.	28,724
New York	South Africa	25,326
Norfolk	Italy*	11,888
Baltimore	—	10,733
Washington	—	9,774
Mobile	Sweden	8,722

1. For import volumes of 5,000 tons or more from a single country, if applicable; in descending order of importance.

*Imports from Italy subject to question—may not be newsprint.

Source: U.S. government figures.

Pigment market in transition; price, availability stable

Kaolin. In 1985, clays of all grades were produced in every state except Alaska, Delaware, Hawaii, Rhode Island, Vermont, and Wisconsin. Thirty top producers supplied about half the output, and 300 others delivered the rest. Together, these firms operate about 1,100 mines. The paper industry uses kaolin clay, supplied by eight to ten companies with 15 mines. Market value for all clays hit a record in 1985 at \$1.1 billion, with kaolin nearly half that. Total clays sold or used by U.S. producers increases 3% in tonnage and nearly 10% in value. Exports increased as well.

Resources of kaolin are primarily located in Georgia, where an estimated 5-10 billion tons lie. Production and price should rise incrementally over 1986, if imports of coated paper remain flat and conversions to alkaline papermaking systems continue slowly. There is some shifting from lower-grade kaolin to higher grades among coated paper producers, but this is a factor of end-user's desire for a higher quality printing surface (i.e., for gloss, ink receptivity improvements). All grades continue at availability.

Calcium carbonate. The paper industry in recent years has been very interested in converting from acid-based forming to alkaline-based forming. The developments are chiefly among fine paper producers, especially at smaller mills. These systems are using between 15% and 20% ash content, which improves sheet life, conserves fiber, and enhances the bottom line for most producers. Alkaline systems have been running abroad for nearly 15 years and in the U.S. for more than a decade. P&P estimates that 40 machines now operate alkaline systems, accounting for roughly 10% of white paper production. This trend should persist into the 1990s, especially if end users

TABLE 2: Major end uses for kaolin clay.

End use	Short tons
Paper	3,375,500
Coating	2,194,075
Filler	1,181,425
Refractories	549,500
Rubber	314,000
Export	2,747,500

TABLE 1: Prices and availability of inorganics for coating, filler.

Product	Availability 1986	Price 1986	Year-end price increase (%)
Calcium carbonate			
Natural ground, range of grades, bag, ton	Market	98-140	0-4
Natural ground, range of grades, slurry, ton	Market	92-133	0-4
Precipitated, bag, ton	Market	225-265	4-5
Hydrated alumina			
Bag, ton	Market	500-700	0-8
Kaolin, clay, ton, bulk			
High-brightness, No. 1	Market	140-150	4-8
Delaminated	Market	88-95	4-8
No. 1 coating	Market	84-86	2-8
No. 2 coating	Market	65	2-8
No. 3 coating	Market	54	2-8
Calcined	Market	400	4-8
Filler, water-washed	Market	59-60	4-6
Plastic pigment, bulk, lb			
Talc, bag, ton	Market	0.80-1.00	3-4
Titanium dioxide			
Anatase, lb, dry	Very tight	180-200	4-5
Anatase, lb, slurry	Very tight	0.67-0.70	4-10
Rutile, lb, dry	Tight	0.69-0.72	4-10
		0.70-0.75	4-10
Zinc oxide, lb			
	Market	0.60-0.80	4-5

(such as carbonless copy producers) push for this type of paper.

Another interesting development is the attempt by one major fine paper producer to locate an online generator at the paper mill. This greatly reduces delivered cost and allows for quick production changes. This may also be just the vehicle that is needed for the larger mills to convert their paper-making systems.

Titanium dioxide. Tight supply will be the situation for titanium dioxide throughout the decade. The reason is limited expansion for domestic producers while users, particularly in the housing and automotive industries, increase sales. Deliveries to paper mills were flat and will remain so if the industry price increases for all grades of TiO₂ go into effect. Production abroad will increase as four new plants are planned for construction during the next two years. Two factors are involved in this development: the possibility of export at current prices and the relaxed environmental guidelines in remote countries. (For a full report on TiO₂ see p. 64).

Other pigments. Many supplementary pigments for coating are available and are used (usually in specialty grades) in papermaking. Plastic pigments are the domain of Dow Chemical since other competition dropped out in 1983. Sources say prices for products will remain under \$1/lb and that use is increasing for users who require higher sheet quality. Talc use has continued at a level pace for the last five years, and no significant change is apparent in price, use, or availability. Hydrated alumina producers are additionally concentrating efforts to reach high-quality paper manufacturers, but no price increase is evident. Zinc oxide suppliers anticipate a price increase in their specific market niche.

Among the coating products that have dropped out of sight in the paper market are satin white and urea-formaldehyde. One producer of satin white has stopped production due to small markets in paper and other manufacturing industries, leaving only one company in this field. The urea-formaldehyde suppliers also have left the paper industry because of shrinking deliveries and a too small market. ■